Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Claims 1-6 (Cancelled)

7. (Currently Amended) A communication method for use by a wireless transceiver, comprising:

demultiplexing, by a demultiplexer, an input signal into a first plurality of demultiplexed signals;

weighting and combining, by a first circuit configured to weight and combine in the baseband domain, said first plurality of demultiplexed signals prior to upconverting;

upconverting, by upconverters, said first plurality of demultiplexed signals into a first plurality of upconverted signals;

dividing, by dividers, said first plurality of upconverted signals into a second plurality of divided signals;

weighting, by a second circuit configured to weight, said second plurality of divided signals ~~so as~~ to form a second plurality of weighted signals, wherein weights used by the second circuitry to weight said second plurality of divided signals are obtained from an eigenvector corresponding to a largest eigenvalue of a cross-correlation matrix;

combining, by a combiner, ones of said second plurality of weighted signals ~~in order~~ to form a third plurality of combined signals; and

transmitting said third plurality of combined signals over a plurality of antennas.

8. (Currently Amended) The method of claim 7 wherein said third plurality of combined signals are each amplified by a respective amplifier and transmitted by a respective antenna ~~and transmitted via a corresponding third plurality of antennas~~.

9. (Currently Amended) The method of claim 7 further including converting, by a digital-to-analog converter, said first plurality of demultiplexed signals into analog signals.

10. (Cancelled)

11. (Original) The method of claim 7 wherein said second plurality of divided signals are RF signals and wherein said weighting and combining are performed within the RF domain.

12. (Currently Amended) The method of claim 8 wherein said first plurality of demultiplexed signals are less in number than said ~~third~~ plurality of antennas.

13. (Original) The method of claim 7 wherein each of said first plurality of upconverted signals is divided into a set of signal components equal in number to said third plurality of combined signals.

Claims 14-18 (Cancelled)

19. (Currently Amended) A wireless communication apparatus, comprising:

a demultiplexer ~~disposed~~ configured to demultiplex an input signal into a first plurality of demultiplexed signals;

~~an arrangement capable of weighting and combining~~ first circuitry configured to weight and combine, in the baseband domain, said first plurality of demultiplexed signals prior to provision to the upconverter;

an upconverter ~~operative~~ configured to upconvert said first plurality of demultiplexed signals into a first plurality of upconverted signals;

~~an arrangement of~~ dividing elements configured to divide ~~capable of dividing~~ said first plurality of upconverted signals into a second plurality of divided signals;

~~an arrangement of weighting elements capable of weighting~~ second circuitry configured to weight said second plurality of divided signals so as to form a second plurality of weighted signals, wherein weights used by the second circuitry to weight said second plurality of divided signals are obtained from an eigenvector corresponding to a largest eigenvalue of a cross-correlation matrix; and

a combiner configured to combine ~~arrangement for combining~~ ones of said second plurality of weighted signals in order to form a third plurality of combined signals that is ~~capable of being~~ transmitted through an antenna structure.

20. (Original) The communication apparatus of claim 19 wherein said third plurality of combined signals are transmitted via a corresponding third plurality of antennas of said antenna structure.

21. (Currently Amended) The communication apparatus of claim 19 further including a ~~D/A~~ digital-to-analog converter configured to convert ~~for converting~~ said first plurality of demultiplexed signals into analog signals.

22. (Cancelled).

23. (Original) The communication apparatus of claim 19 wherein said second plurality of divided signals are RF signals and wherein said weighting and combining are performed within the RF domain.

24. (Original) The communication apparatus of claim 20 wherein said first plurality of

demultiplexed signals are less in number than said third plurality of antennas

Claims 25-32 (Cancelled)

33. (Currently Amended) A wireless communication apparatus, comprising:

a demultiplexer ~~disposed~~ configured to demultiplex an input signal into a first plurality of demultiplexed signals;

~~an arrangement capable of weighting and combining~~ circuitry configured to weight and combine, in the baseband domain, said first plurality of demultiplexed signals prior to provision to the upconverter;

an upconverter ~~operative~~ configured to upconvert said first plurality of demultiplexed signals into a first plurality of RF signals; and

an RF processing network ~~operative~~ configured to perform weighting and combining operations in the RF domain upon said first plurality of RF signals~~, thereby producing~~ to produce a second plurality of RF signals ~~capable of being~~ that is transmitted by an antenna structure, wherein RF processing network performs the weighting operations using weights that are obtained from an eigenvector corresponding to a largest eigenvalue of a cross-correlation matrix.

34. (Currently Amended) The apparatus of claim 33 wherein said RF processing network includes an arrangement of dividing elements configured to divide ~~capable of dividing~~ said first plurality of RF signals into a third plurality of divided RF signals.

35. (Original) The apparatus of claim 34 wherein said RF processing network further includes:

an arrangement of weighting elements ~~capable of weighting~~ configured to weight said third plurality of divided RF signals so as to form a third plurality of weighted RF signals;

a combiner arrangement configured to combine ~~for combining~~ ones of said third plurality of weighted RF signals ~~in order~~ to form said second plurality of RF signals.

36. (Cancelled).

37. (Currently Amended) A wireless communication apparatus, comprising:

a baseband processing network ~~operative~~ configured to perform a weighting and combining operation on a plurality of demultiplexed signals prior to provision to the upconverter;

an upconverter ~~operative~~ configured to upconvert an input signal into an input RF signal; and

an RF processing network ~~operative~~ configured to perform a weighting operation in the RF domain upon said input RF signal ~~and thereby~~ to produce a first plurality of RF signals capable of being transmitted by an antenna structure, wherein RF processing network performs the weighting operation using weights that are obtained from an eigenvector corresponding to a largest eigenvalue of a cross-correlation matrix.

38. (Currently Amended) The apparatus of claim 37 wherein said RF processing network includes an arrangement of dividing elements ~~capable of dividing~~ configured to divide said input RF signal into a first plurality of divided RF signals.

39. (Currently Amended) The apparatus of claim 38 wherein said RF processing network further includes an arrangement of weighting elements ~~capable of weighting~~ configured to weight said first plurality of divided RF signals ~~so as~~ to form said first plurality of RF signals.

40. (Cancelled)

41. (Original) The apparatus of claim 35 wherein values of said weighting elements are selected to maximize an output signal-to-noise ratio of a receiver disposed to receive said second plurality of RF signals.

42. (Original) The apparatus of claim 39 wherein values of said weighting elements are selected to maximize an output signal-to-noise ratio of a receiver disposed to receive said first plurality of RF signals.

43. (Cancelled)

44. (Original) The apparatus of claim 19 wherein values of said weighting elements are selected to maximize an output signal-to-noise ratio of a receiver disposed to receive said third plurality of combined signals.